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**The Fears of Evaluation about Performance (FEAP) Task: Inducing Anxiety-Related Responses to Direct Exposure to Negative and Positive Evaluations**

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## Abstract

Fears of negative and positive evaluation (i.e., evaluative fears) manifest within performance-based situations (e.g., public speaking, group presentations), particularly among those experiencing social anxiety. Within these performance-based situations, individuals experiencing such evaluative fears frequently display a variety of impairments (e.g., avoidance, nervousness) that might manifest within and across various settings (e.g., employment, school). How do those who experience these fears react to *in-the-moment* feedback about their performance? We constructed the Fear of Evaluation about Performance (FEAP) task to examine ecologically valid experiences with anxiety when reacting to positive and negative feedback. During the task, participants gave a speech, and subsequent to this and in counterbalanced order, received positive and negative feedback about their speech, with continued assessment of anxiety-related arousal throughout the task. We tested the FEAP task among 127 adults, who provided self-reports of fears of positive and negative evaluation before completing the task. Fears of positive evaluation uniquely predicted arousal following receipt of positive feedback, whereas fears of negative evaluation uniquely predicted arousal following receipt of negative feedback. Relative to participants receiving positive feedback first, those receiving negative feedback first experienced elevated post-feedback arousal, followed by a steep decline in arousal post-positive feedback. Conversely, participants receiving positive feedback first experienced a buffer effect whereby arousal post-negative feedback remained low, relative to the arousal experienced post-negative feedback among those who received negative feedback first. We expect the FEAP task to inform basic science on fears of negative and positive evaluation, as well as treatment planning in applied clinical settings.

**Keywords:** fear of negative evaluation; fear of positive evaluation; social anxiety; social situations; speech task

Maladaptive thought patterns or cognitions feature prominently in conceptualizations of a variety of mental health domains, and in particular, those domains marked by intense fear and avoidance of social situations, such as social anxiety (e.g., Crick & Dodge, 1994; Rapee & Heimberg, 1997). In fact, those who experience relatively high levels of social anxiety often interpret information from their environment in ways that differ from those who experience relatively low levels of social anxiety (e.g. interpreting neutral information as negative or harmful; Bögels et al., 2010). Maladaptive cognitions may be particularly likely to manifest in social situations with strong performance expectations (e.g., perceptions of audience members during a work presentation). Within these situations, individuals may process information from their environment using cognitive strategies that may impair performance. Such cognitions may take the form of maladaptive “real-time” attributions of others’ perceptions about their performance (e.g., “People think my presentation is boring”), or as maladaptive expectations for performance in the future (e.g., “Now that this presentation went well, the pressure is on for the next one”). When confronted with evaluations that provoke fear-based responses (e.g., actually being told that one displayed poor performance), such experiences may increase the likelihood of maladaptive outcomes, including avoidance of situations where feared evaluations may be possible. In this paper, we test the validity of scores taken from a task for assessing individual differences in a specific set of maladaptive cognitions—namely *fears of evaluation*.

Fears of evaluation represent a prominent set of cognitions believed to contribute to individual differences in information processing and the development and maintenance of social anxiety (Weeks & Howell, 2012). Those experiencing these cognitions hold the belief that individuals with whom they are interacting are evaluating their performance during this and/or future interactions (Rapee & Heimberg, 1997). Recent evidence suggests that those meeting

diagnostic criteria for social anxiety disorder often struggle with two distinctly valenced fears of evaluation—negative and positive (Weeks & Howell, 2012). The majority of work to date on fears of evaluation has focused on *fear of negative evaluation* (Watson & Friend, 1969; Clark & Wells, 1995; Weeks, Heimberg, Rodebaugh & Norton, 2008a). This fear involves an individual's belief that those with whom they are interacting are evaluating them in a negative mode (i.e., ridicule, criticism, or teasing). For example, an employee preparing to deliver a presentation at work may enter that situation with an intense, perhaps unwarranted apprehension that they will encounter harsh, negative evaluations from supervisors about their performance.

Recent research has also highlighted the *fear of positive evaluation*, which involves evaluations of a positive nature (e.g., praise, Heimberg, Brozovich, & Rapee, 2010; Weeks, Heimberg, & Rodebaugh, 2008b). Inherent in this fear is a belief that positive evaluations may lead to more negative future consequences (Wallace & Alden, 1997). That is, individuals who receive a positive evaluation of their performance believe others may heighten their expectations for future work, thus leading to eventual negative consequences when they “fail.” In addition, fears of positive evaluation are believed to stem from an evolutionary perspective. Given that praise is often presented within public domains (e.g., praise at work in front of co-workers), those experiencing social anxiety believe this praise may make them the center of attention and thus heighten their status as a socio-dominant threat (Wallace & Alden, 1997; Weeks et al., 2010). To return to the work presentation example, the employee's fears of positive evaluation might manifest as a fear that their supervisor now holds expectations for their performance on future work presentations that the employee sees as unattainable. Alternatively, that same employee may experience fears of positive evaluation and, following their presentation, their supervisor makes a public, positive comment about the presentation in front of coworkers. This

employee's fears of positive evaluation might then manifest as distress about their coworkers perceiving the praise as threatening in terms of evaluations of their own presentations.

Given the differences between fears of negative and positive evaluation in form, function, and expression, what remains unclear are potential individual differences in experiences of these fears. A recent theoretical account of evaluative fears may provide insight into these individual differences. Specifically, the *Bivalence Fear of Evaluation Model* (BFOE) posits that individuals, especially those with elevated social anxiety, display two distinctly valenced fears of evaluation; negative and positive (Weeks & Howell, 2012). Recent research indicates that these fears represent distinct constructs, and relate differentially to outcomes (i.e., impairment and avoidance; Karp et al., 2018; Weeks & Howell, 2012). Further, although individuals might experience *both* fears of negative and positive evaluation simultaneously, not all do, and in fact, many may experience one set of fears to a greater degree than the other (e.g., higher fears of negative vs. positive evaluation and vice versa; see Lipton, Weeks, & De Los Reyes, 2016).

The BFOE model raises interesting questions regarding fears of negative and positive evaluation. In particular, does the actual receipt of positive and/or negative evaluations concerning one's own performance and the *sequence* by which one receives this feedback play a role in people's subjective experiences with performance-based social situations? Indeed, a gap in the literature on fears of evaluation involves examining how people react *in the moment* to negative and positive feedback provided under ecologically valid performance situations. More broadly, and as others have recently noted (Reichenberger & Blechert, 2018), controlled experimentation may address this gap in the literature. Thus, in this study we implemented a randomized design to test a novel task for examining reactivity to in-the-moment feedback.

Fears of evaluation most typically involve social situations and specifically,

*performance-based* situations. Thus, most behavioral tasks designed to assess aversive responses to social-evaluative scenarios aim to mimic these situations. With some modification, these tasks may inform studies about evaluative fears. In particular, researchers employ social stressor tasks to study responses to performance-based fears. Of the many social stressor tasks available, impromptu speech tasks factor prominently in research on social-evaluative stress (e.g., Beidel et al., 1989; Glazier & Alden 2019; Koban et al., 2016). These tasks mimic social and performance-based situations by instructing participants to prepare and perform a speech in front of an audience, often consisting of members of a research team. These tasks robustly elicit anxiety and arousal in individuals experiencing elevated social anxiety, as well as the general population (Beidel et al., 1989; Byrne, Makol, Keeley, & De Los Reyes, 2019; Herbert et al., 2005; Hofmann, Ehlers, Newman, & Roth, 1995). Further, these tasks harbor clinical value: They serve as indicators of treatment response, namely to assess changes in reactivity to anxiety-provoking situations (e.g., Beidel et al., 2014; Bunnell, Beidel, & Mesa, 2013).

Social stressor tasks provide useful and ecologically valid information on how individuals respond to social and performance-based stress. Yet, as currently constructed, they lack the ability to provide information on how individuals actually respond to the performance-based feedback at the core of their fears of evaluation. Given the lack of ecologically valid measurement options, it is unclear how fears of negative and positive evaluation manifest in performance-based social situations. One way to address this gap in the literature is to provide in-person verbal feedback in the context of a speech task. Including an *in-the-moment* evaluative component in the form of feedback facilitates examining ecologically valid reactions to feedback. In fact, the Social and Organizational Psychology literatures point to feedback as an important mechanism to fuel change and productivity in the workforce, and as such, these

performance scenarios encompass activities that adult individuals are likely to encounter in a wide range of occupational and educational situations (Ilgen & Davis, 2000). Specifically, reactions to feedback play important roles in effectively communicating in the workplace and other social domains (Steelman & Rutkowski, 2004). In fact, consider the normative experience of receiving feedback. Receiving negative feedback tends to evoke a stronger response from individuals than receiving positive feedback (Geddes & Baron, 1997). Further, positive experiences like receiving positive feedback tend to buffer the effects of social strain and negative experiences (see Cohen & Hoberman, 1983). In this way, understanding reactions to performance-based feedback includes not only examining reactions to receipt of negative and positive feedback but also the *sequence* of this feedback. Thus, a key aim of this study was to test an approach to examining reactions to performance-based feedback that evaluated reactions to positive and negative feedback about performance, as well as whether reactions to positive and negative feedback differed depending on the sequence of receipt of feedback (e.g., receiving negative feedback before positive feedback, and vice versa).

The ability to examine responses to evaluation in ecologically valid ways also has significant implications for treating social anxiety. For example, treatments for social anxiety typically focus on maladaptive cognitive patterns and behavioral avoidance (Clark & Wells, 1995; Rapee & Heimberg, 1997). In addition, the majority of treatments utilize exposure-based techniques in which treating clinicians expose clients to distress-provoking situations, and provide them with training on how to identify maladaptive reactions to distress and develop strategies to cope with such distress (Hofmann, 2007). An ecologically valid social interaction task that allows for assessment of clients' responses to evaluative feedback may assist clinicians in understanding how to plan key treatment activities within evidence-based treatments for social



anxiety (e.g., fear hierarchies and behavioral exposures). In this respect, instruments for measuring in-the-moment responses to evaluative feedback may result in discovering previously untapped resources to optimize treatment response. In terms of research, such a task may help in refining personalized forms of care, and testing treatment sequences designed to meet clients' unique needs (e.g., adaptive interventions; see Almirall & Chronis-Tuscano, 2016).

### **Purpose and Hypotheses**

The purpose of the present study was to test the Fears of Evaluation about Performance (FEAP) task: A novel task designed to examine fears of evaluation and receipt of feedback in a social-evaluative performance context. Specifically, participants completed an impromptu speech task. Subsequent to their performance, we randomly assigned participants to the order in which they received positive and negative feedback. In this sense, we designed the FEAP task to assess participants' reactivity to both positive and negative feedback, and importantly, the effect of the *sequence* of feedback. We tested five hypotheses. First, prior work indicates that impromptu speech tasks produce increases in arousal in the general population (Bouma, Riese, Ormel, Verhulst, & Oldehinkel, 2009; De Los Reyes et al., 2015, 2017). Thus, we hypothesized that individuals would generally experience elevated arousal throughout the FEAP task, relative to arousal at rest. Second, we hypothesized that arousal reactivity to negative and positive feedback would each uniquely relate to fears of negative evaluation and positive evaluation, respectively. Third, consistent with prior work (Geddes & Baron, 1997), we predicted that individuals' arousal would be higher following the initial receipt of negative feedback, relative to following the initial receipt of positive feedback. Fourth, we expected that, relative to pre-speech arousal, individuals would experience maintained elevations in arousal following receipt of positive feedback, but these elevations would be lower than those displayed by individuals following receipt of

negative feedback. Fifth, consistent with prior work (Cohen & Hoberman, 1983), we predicted that individuals receiving positive feedback first (i.e. randomized to receive positive feedback first, negative feedback second) would experience less arousal following receipt of negative feedback, relative to the levels of arousal observed for negative feedback among participants who received negative feedback first.

## **Methods**

### **Participants**

Participants included 127 adults recruited from Washington D.C., Maryland, and Northern Virginia as part of a larger study at a mid-Atlantic university on adolescent mental health. Adults contacted the laboratory in response to one of two advertisements: (a) an advertisement targeting parents who sought a social anxiety screening evaluation on behalf of their adolescent child (i.e., clinic-referred group), or (b) an advertisement targeting parents wishing to participate in a non-clinic study on interactions between parents and adolescents (i.e., community control group). Both groups completed the same measures, and the groups varied regarding whether they received feedback on the adolescent's mental health. Specifically, after completing the assessment, parents of the clinic-referred adolescents received such feedback, and, when appropriate, received referrals to diagnostic and treatment services for social anxiety. Parents of community control adolescents did not receive either feedback or referrals.

To be eligible, the study required participants to: (a) be fluent in English, (b) understand the consent and interview processes, and (c) have an adolescent child aged 14-15 currently living in the home who did not have a history of learning or developmental disabilities, and (d) have not received cognitive behavioral therapy in the past three months. The total sample included 43 clinic-referred families and 84 community control families. Participants included 105 adult

females and 22 adult males with a mean age of 45.13 years ( $SD = 7.22$ ). Participants identified their racial/ethnic backgrounds as Black or African American (53.5%); White, Caucasian American, or European (37.8%); Hispanic or Latino/a (Spanish) (7.1%); Asian American or Asian (3.9%); American Indian (3.1%); and “Other” (6.3%). The percentages sum to larger than 100% because participants had the option to select multiple racial/ethnic backgrounds. Additionally, some participants marked “Other” to identify racial backgrounds that were not provided on our demographics list (e.g., Caribbean). Participants also reported on weekly household income using a 10-point Likert scale in \$100 increments (e.g. \$101-200 per week). According to their reports, participants reported weekly household incomes of \$500 or less (26%), between \$501 and \$900 (22%), or \$901 or more (52%). Participants reported their marital status as currently married (48%), never married (21.3%), divorced or separated from a significant other (25.2%), living with a significant other (4.7%), or widowed (0.8%). They reported that their highest level of education completed included less than high school (3.1%), high school or equivalent (14.2%), some college (18.1%), associate’s or vocational degree (10.2%), bachelor’s degree (18.1%), master’s degree (22%), or advanced degree (14.2%). Our participants’ demographic information closely reflects the ethnic/racial and socioeconomic data from the geographic region sampled (U.S. Census Bureau, 2016).

Our sampling approach yielded an optimal sample in which to address our aims. In using a sample of parental adults recruited as part of a larger study of adolescent social anxiety and family relationships, we sought to create a sample that varied continuously in levels of our constructs of interest (i.e., range of relatively low to relatively high evaluative fears). A large body of work supports that parent and adolescent functioning, as well as family functioning (e.g., parent-adolescent conflict), correlate highly (Granic & Patterson, 2006). That is, parent

functioning impacts adolescent functioning and vice versa, and shared genetic and environmental factors contribute to associations between parent, adolescent, and family functioning (Burt, 2009; Caspi, Taylor, Moffitt, & Plomin, 2000). For this reason, similar to the range in psychosocial functioning observed among adolescents (e.g., De Los Reyes et al., 2019; Deros et al., 2018; Thomas, Daruwala, Goepel, & De Los Reyes, 2012), we expected our sample to display large variability in participant functioning. In fact, prior work indicates that this approach yields a sample conducive to addressing aims for which a key prerequisite involves individual differences in displays of aversive reactions to stressful scenarios (e.g., public speaking; see Byrne et al., 2019). This approach is also consistent with initiatives focused on dimensional models of psychopathology, as well as the enhanced reliability and validity of dimensional measurement approaches, relative to discrete approaches (Markon, Chmielewski, & Miller, 2011).

### **Procedure**

Participants who responded to our advertisements and thus expressed interest in the study contacted our office, and completed a 15-20 minute phone screen assessing eligibility criteria for both their adolescent and themselves. Following determination of eligibility, participants were invited to attend a single laboratory visit. Following consent, participants completed self-report surveys about psychosocial functioning, a subset of which we describe below. After completing these measures, research personnel led participants into a room and completed a baseline self-report rating of arousal. Participants were then introduced to and participated in the FEAP task as described below. Upon completing the study, families received \$100 in compensation (\$50 to the parent/\$50 to the adolescent) and were fully debriefed on all study procedures.

### **Survey Measures**

Participants completed a demographics form to collect information reported previously,

as well as several self-report survey measures used to examine links between individual differences in fears of evaluation and the FEAP's feedback conditions.

**Fears of evaluation.** We assessed fears of evaluation using two scales. First, we assessed fears of positive evaluation using the Fear of Positive Evaluation Scale (FPES; Weeks et al., 2008b). This 10-item scale includes two reverse-scored items (for detecting response biases) that are not used to calculate the total score. Respondents make Likert-type ratings ranging from 0 (not at all true) to 9 (very true) (sample item: "I don't like to be noticed in public places, even though I feel as though I am being admired"). Greater FPES scores relate to greater scores on measures of social avoidance and distress (Weeks et al., 2008b), and the FPES distinguishes non-anxious controls from those diagnosed with social anxiety disorder (Rodebaugh et al., 2011).

Second, we assessed fears of negative evaluation using the Brief Fear of Negative Evaluation scale (BFNE; Leary, 1983). Among the BFNE's 12 items, 4 are reverse-scored (sample item: "I am afraid people will find fault with me"), using a 5-point Likert-type rating ranging from 1 (not at all characteristic of me) to 5 (extremely characteristic of me). Greater FPES scores relate to greater scores on the BFNE and social anxiety symptom measures (Weeks et al., 2008a, 2008b). Further, scores on the BFNE are sensitive to change among those undergoing treatment for social anxiety (Weeks et al., 2012). For both measures, greater scores reflect greater evaluative fears. In the current sample, the BFNE ( $M = 31.38$ ;  $SD = 8.11$ ) and FPES ( $M = 20.38$ ;  $SD = 14.64$ ) both displayed (good) internal consistency  $\alpha$ 's of .85.

### **FEAP Task and Arousal Measure**

The FEAP task consists of several components, which we describe below. A manual including all of the materials needed to administer the task (e.g., task scripts and procedures) is available by request to the corresponding author.

**Impromptu speech task.** We measured responses to evaluative fears and social stress using a modified version of an Impromptu Speech Task described above (Beidel et al., 1989). Specifically, participants were asked to perform a five-minute impromptu speech. They were given three minutes to prepare their speech using up to three standardized topics, provided by the administrator (i.e., “What are the qualities of a good United States President?”, “Should all states adopt mandatory no smoking in public places laws?”, “What should be the legal drinking age and/or penalties for drunk driving?”). Prior work using versions of the Impromptu Speech Task suggests it reliably elicits social stress both in those with elevated social anxiety, as well as in non-clinic samples (Beidel et al., 1989; Bouma et al., 2009; De Los Reyes et al., 2015, 2017).

**Positive and negative feedback conditions.** In line with the speech task procedures, participants were informed that following a preparation period, they would be asked to give a five-minute speech in front of a camera, and that two observers were watching in another room. The two observers would watch and subsequently evaluate the quality of their speech. Specifically, participants were informed that one observer would witness and evaluate their performance during the first half of their speech, and a second evaluator would assess their performance during the second half of their speech. In reality, this portion of the task included a deception component, and thus we prepared all evaluator feedback prior to participants’ speeches and standardized this feedback for all participants (i.e., all participants received the same positive/negative feedback, in counterbalanced order). Further, participants received no further information about the observers. We included information about observers because research indicates that social stressor tasks need to have a socio-evaluative threat component to reliably elicit a stress response (e.g., Gunnar, Talge, & Herrera, 2009). Further, we included two observers because in our judgment having a single observer deliver contradictory feedback to the

participant (both positive and negative) would not make for a believable scenario.

Following giving their speech, participants completed a self-rating of arousal, while research staff “retrieved” feedback from the observers. Each participant received two pieces of feedback by trained research personnel, one positive and one negative, presented in counterbalanced order. Personnel who administered the feedback underwent a rigorous training process typified by repeated practice of study materials, with a particular emphasis on delivering feedback utilizing vocal tone cues and non-verbal cues (i.e., facial cues) that matched the valence of feedback being delivered. We trained personnel to present feedback identically for all subjects, and to do so by reading from a scripted sheet designed to appear as if the “observers” had written it following the speech. Immediately following each piece of feedback, we asked participants to complete a self-reported arousal rating. They were then asked to wait alone in a laboratory room for five minutes. After waiting, participants were told that they would repeat the process again and prepare a second speech using the same procedures used for the first speech. In reality, this was a second piece of deception designed to assess anticipatory arousal at the end of the task. Participants completed a final arousal rating at the end of the preparation period for this “second speech” but research personnel subsequently informed participants that they would not complete this second speech.

**Self-reported arousal.** We assessed self-reported state-arousal (i.e., ratings provided before and after experimental tasks) at several time-points throughout the FEAP task using the Self-Assessment Manikin (SAM; Bradley & Lang, 1994). The SAM uses pictorial representations of arousal to assess various states, including arousal. The SAM has been frequently used in speech tasks to measure state arousal (e.g., Bouma et al., 2009; Byrne et al., 2019), and in other tasks (e.g., one-on-one interactions; Deros et al., 2018; Karp et al., 2018;

Szollos et al., 2019). Participants completed the SAM prior to the speech task at a resting or baseline arousal period, immediately following the completion of the speech task, immediately following receipt of each piece of feedback, and preceding the period in which participants were led to believe that they would deliver a second speech. In Table 1, we report descriptive statistics for these SAM ratings, with higher scores indicating higher levels of arousal.

**Manipulation check questions.** A key element of the study involved examining the ability of a novel task to elicit reactions of fears of negative and positive evaluation. We used an experimental design to test these reactions, specifically within a design that randomly assigns participants to the order in which they were exposed to negative and positive evaluations of their performance on the speech task. Further, as previously described our procedures involved training personnel to deliver specific kinds of valenced feedback to participants and in counterbalanced order. All of these task components necessitated measurement of participants' impressions of the evaluations delivered to them by trained personnel. Thus, we constructed a set of items designed to assess these very impressions (Table 2). Participants completed these questions twice, immediately following each of the feedback conditions to which we exposed the participants. Table 2 includes item responses both by feedback condition and the order in which participants received negative versus positive feedback.

### **Data Analytic Plan**

**Preliminary analyses.** We conducted preliminary analyses in an effort to demonstrate our ability to use the speech task and feedback paradigm to address our research aims. Specifically, the utility of the FEAP task hinges on the idea that *in the moment*, participants found the feedback to be delivered as intended (i.e., positive vs. negative). To test this assumption about the FEAP task, we conducted three repeated-measures analyses of variance



(ANOVAs), one for each of the manipulation check questions reported in Table 2. In each of these ANOVAs, time was the within-subjects variable (feedback 1 vs. feedback 2), feedback condition was the between-subjects variable (positive feedback first vs. negative feedback first), and one of the three manipulation questions served as the repeated-measures dependent variable. In each of these ANOVAs, we were interested in testing for the presence of a time x feedback condition interaction effect. This interaction effect would essentially reveal whether participants' impressions of the feedback changed as they moved from one feedback condition to the next.

**Task reactivity.** We conducted a series of tests to demonstrate that participants reacted sufficiently to the speech task to warrant examining their responses to feedback about their task performance. That is, does the FEAP task elicit sufficient amounts of anxiety-related arousal, such that we are confident that we could activate fears of evaluation from those exposed to the task? Specifically, we conducted paired samples *t* tests to examine the degree to which participants' self-reported arousal was elevated during each of the speech task and feedback periods, relative to the resting baseline period. We also conducted independent samples *t* tests to demonstrate that the two feedback conditions (positive feedback first vs. negative feedback first) did not significantly differ on either baseline arousal or fears of negative and positive evaluation.

**Relations between feedback conditions and socio-evaluative fears.** A key assumption underlying use of the feedback portion of the paradigm is that each of the feedback conditions would be specifically relevant to those displaying fears of negative versus positive evaluation. To test this, we examined whether participants' survey reports of fears of evaluation predicted their arousal following receipt of the specific form of performance feedback germane to the evaluative fear. Specifically, we conducted two multiple regressions, each focused on the first feedback that participants received, and by the condition to which they were assigned to receive feedback first

(i.e., positive first vs. negative first). In these regressions, the SAM rating completed by participants following receipt of their first feedback served as the dependent variable. We entered participants' BFNE and FPES reports in separate steps as independent variables. For the condition receiving positive feedback first, we examined whether participants' FPES reports predicted their SAM ratings following receipt of their first feedback, over-and above their BFNE reports. Conversely, for the condition receiving negative feedback first, we examined whether participants' BFNE reports predicted their SAM ratings following receipt of their first feedback, over-and above their FPES reports. This approach resulted in our splitting the sample to conduct two separate regressions. Thus, we conducted a power analysis for the increase in variance explained in the second step of these equations. Assuming the presence of medium-magnitude effects, analyses focused on positive feedback first ( $n = 64$ ; power = .86) and negative feedback first ( $n = 61$ ; power = .84) were each well-powered to detect medium-magnitude effects.

**FEAP task effects on arousal.** We addressed our aims regarding the effects of the FEAP task on participant arousal by conducting a single, repeated-measures ANOVA. Specifically, our dependent variables (i.e., SAM ratings) served as a repeated-measures variable modeled as a function of two independent variables, time and feedback condition. We entered as an independent variable one within-subjects "time" factor to account for the assessment period of the arousal during the task (during speech, following feedback 1, following feedback 2, and preceding the "second speech") and one between-subjects factor of feedback condition (positive, negative). We also entered baseline arousal as a between-subjects continuous covariate. In this ANOVA, we were interested in testing for the presence of a time x feedback condition interaction effect. This interaction effect would essentially reveal whether participants' arousal changed over time in different ways, depending on whether participants were exposed to positive

or negative feedback first. In the presence of a significant interaction effect (i.e., via the Roy's Largest Root  $F$  test), we conducted follow-up within-subjects contrasts. The FEAP task exposes participants to stimuli such that portions of the sample vary in the sequence of stimuli presentation. Thus, we expected our experimental conditions to result in nonlinear “rises and falls” in arousal. In line with this, our hypotheses involved testing nonlinear changes in arousal across the task, which we executed by calculating polynomial contrasts in which we examined interaction effects on SAM ratings across linear, quadratic, and cubic effects.

For all tests, we inferred the statistical significance of findings relative to a  $p$ -value threshold of  $< .05$ . We inferred magnitudes of effect sizes based on Cohen's (1988) effect size conventions for the effect sizes  $d$  (small: 0.30; medium: 0.50; large: 0.80),  $r$  (small: .10; medium: .30; large: .50), and  $\eta^2$  (small: .01; medium: .06; large: .14; see also Miles & Shevlin, 2001).

## Results

### Preliminary Analyses

We computed means, standard deviations, and skewness and kurtosis statistics for all survey measures and all ratings made within the FEAP task. All survey measures displayed acceptable levels of internal consistency. Further, all survey measures and task ratings displayed acceptable levels of skewness and kurtosis (i.e., skewness/kurtosis less than  $\pm 2.0$ ).

In Table 2, we report participants' responses to our manipulation check questions. We observed significant time  $\times$  feedback condition interaction effects. Each of these interactions indicated that our feedback conditions functioned as intended. Specifically, participants found the positive feedback delivered to them to be more positive than the negative feedback they received. Further, following receipt of positive feedback, participants found both the speech they gave more effective, and believed they would give a more effective speech in the future, relative

to their impressions following receipt of negative feedback. In sum, we administered the positive and negative feedback conditions within the FEAP task as intended.

### **Participants' Task Reactivity**

In Table 1, we report paired samples *t* tests comparing participants' arousal levels for each period of the FEAP task relative to baseline arousal. Consistent with our hypotheses and with medium-to-large magnitudes of effects, participants' arousal ratings were elevated during each of the periods of the task, relative to baseline arousal. These findings indicate that the FEAP task created a socially stressful evaluative context; one for which we could sufficiently elicit fears of negative and positive evaluation. Importantly, the feedback conditions did not differ on baseline arousal,  $t(124) = 0.47$ ;  $p = .63$ . Similarly, the feedback conditions did not differ on FPES ( $t[125] = 0.68$ ,  $p = .50$ ) or BFNE ( $t[125] = -0.49$ ,  $p = .62$ ) scores.

### **Links between Feedback Conditions and Evaluative Fears**

Beyond our expectations of the FEAP task eliciting anxiety-related arousal, we also expected the task's feedback conditions to be relevant for the specific fear of evaluation we hoped to elicit during that condition. As mentioned previously, we tested this aim separately by experimental group and the feedback condition to which we exposed them first (i.e., positive [ $n = 64$ ], negative [ $n = 61$ ]). For fears of positive evaluation, in step 1, there was a non-significant effect of the BFNE in relation to SAM arousal scores following receipt of positive feedback ( $\beta = .20$ ;  $\Delta R = .04$ ;  $p = .11$ ); an effect for which the FPES incrementally contributed a significant and medium-magnitude effect in step 2 ( $\beta = .31$ ;  $\Delta R = .08$ ;  $p < .05$ ). For fears of negative evaluation, in step 1, the FPES predicted SAM arousal scores following receipt of negative feedback ( $\beta = .35$ ;  $\Delta R = .12$ ;  $p < .01$ ); an effect for which the BFNE incrementally contributed a significant and large-magnitude effect in step 2 ( $\beta = .50$ ;  $\Delta R = .19$ ;  $p < .001$ ). Incidentally, the significant FPES

effect observed in step 1 was no longer significant in step 2 ( $\beta = .11$ ;  $p = .37$ ). In sum, the FEAP task's conditions each validly indexed the socio-evaluative fear they were designed to elicit.

### **FEAP Task Effects on Arousal**

We report in Table 3 the results of our main tests of the FEAP task's effects on participants' anxiety-related arousal. We observed significant main effects of baseline arousal and time, a non-significant main effect of feedback condition, and a non-significant time x baseline interaction effect. These effects were qualified by a significant time x feedback condition, cubic interaction effect. We graphically represent this interaction effect in Figure 1.

Figure 1 highlights several features germane to our hypotheses. Specifically, in reaction to the feedback condition immediately following delivery of the speech (i.e., feedback 1), participants' SAM ratings remained elevated during receipt of negative feedback, relative to receipt of positive feedback. Yet, recall that in Table 1, those receiving positive feedback first still experienced elevated arousal relative to arousal at baseline. Taken together, findings from arousal levels at post-feedback 1 confirm our expectations that although both feedback conditions would elicit anxiety-related arousal, those receiving negative feedback first would experience greater arousal relative to those receiving positive feedback first.

As we progress to feedback 2, we see that, as expected, those receiving positive feedback first experienced a buffering effect against aversive reactions to negative feedback. Specifically, following receipt of negative feedback at feedback 2, the level of post-feedback arousal experienced by those receiving positive feedback at feedback 1 remained low, relative to the post-feedback arousal experienced at feedback 1 by participants who received negative feedback first. Overall, participants displayed differential anxiety-related arousal throughout the task as a function of the sequence by which they received evaluative feedback about performance.

## Discussion

### Main Findings

In this study, we tested a task constructed to assess fears of evaluation and receipt of feedback in social-evaluative performance contexts (i.e., the FEAP task). We obtained five findings. First, participants generally experienced elevated arousal throughout the different periods of FEAP task, relative to baseline arousal. Second, specific to the feedback periods, individual differences in fears of negative evaluation and positive evaluation uniquely predicted arousal reactivity to negative and positive feedback, respectively. Third, during the FEAP task, participants displayed elevated arousal following the initial receipt of negative feedback, relative to receipt of positive feedback. Fourth, relative to baseline arousal, participants maintained (relative to pre-speech arousal) elevated arousal following receipt of positive feedback, but the elevation was lower than arousal following receipt of negative feedback. Fifth, we observed a buffering effect of positive feedback on aversive reactions to negative feedback. That is, participants who received positive feedback first experienced less arousal following receipt of negative feedback, relative to the levels of arousal observed for negative feedback among participants who received negative feedback first. In sum, scores taken from the FEAP task reflect anxiety-related arousal in reaction to receipt of positive and negative feedback about performance during a socially evaluative stressor (i.e., public speaking).

### Research and Clinical Implications

Our findings have important research and clinical implications. First, our findings support central tenets of the BFOE model (Weeks & Howell, 2012), namely the value in considering fears of both negative *and* positive evaluation. In particular, participants' fears of negative and positive evaluation uniquely predicted arousal levels in reaction to in-the-moment feedback,

depending on the “match” in valence in feedback (e.g., fears of negative evaluation predicted reactions to receipt of negative feedback). Further, the FEAP task revealed distinct patterns of arousal that manifest depending on the *sequence* of evaluative feedback (i.e., positive before negative and vice versa). Of course, we observed these effects for the sample generally. It remains an open question whether the same patterns occur among those displaying high levels of fears of positive and/or negative evaluation. For instance, for the whole sample generally—only some of whom displayed clinically elevated evaluative fears—increased fears of positive evaluation related to increased arousal after receipt of positive feedback. Does this same pattern manifest among participants who all display clinically elevated fears of positive evaluation? Our sample size precluded our ability to construct trajectories of arousal across the FEAP task, specifically for participants who displayed clinically elevated fears of positive and/or negative evaluation. Future research should examine whether patterns of arousal vary as a function of clinical status, namely elevated fears of positive and/or negative evaluation.

Second, our findings also have important clinical implications. That is, if future research reveals that the FEAP task allows for detection of arousal patterns as a function of level of fears of evaluation, then we expect data from the task to inform treatment planning. We see two innovative directions for future research. For example, among participants whose arousal patterns remain elevated following receipt of positive evaluation, do they achieve positive treatment benefits if they receive an exposure-based course of treatment focused on social situations specifically focused on experiences with positive evaluation (e.g., receiving compliments from strangers)? This would be an important clinical advance given that current exposure-based treatments for social anxiety primarily emphasize anxiety-provoking social situations that involve receipt of negative and/or neutral feedback (Rapee & Heimberg, 1997). A

second area of research may focus on the ability to personalize the FEAP task to fit evaluative scenarios other than public speaking. Indeed, for some clients using the FEAP task may involve modifying the evaluative scenario to fit situations of proximal relevance to their own clinical presentations. Yet, whether one can personalize the FEAP task for use in other evaluative scenarios is an important question that merits further study.

### **Limitations**

Three limitations to the current study should be noted. First, we employed a recruitment strategy that yielded a sample enriched in social anxiety and related concerns (i.e., adult participants, some of whom had adolescents who displayed clinically elevated social anxiety). Yet, the majority of participants likely still endorsed low levels of fears of negative and positive evaluation, relative to a sample of participants with diagnosable mental health concerns. In this respect, we were underpowered to test whether those who displayed clinically severe levels of fears of evaluation displayed differential patterns of arousal across the FEAP task periods. We encourage future work seeking to replicate and extend our findings to do so in a clinical sample.

Second, in line with best practices for evaluating anxiety and related concerns, we constructed the FEAP task using a multi-method approach to assess reactivity to task procedures, and in particular, the feedback conditions (Antony & Rowa, 2005; Silverman & Ollendick, 2005). Our approach likely provided greater ecological validity than utilizing survey-based approaches alone. Indeed, public speaking has been consistently shown to be one of the most salient concerns for adults experiencing social anxiety concerns (see Beidel et al., 1989; Botella, Hofmann, & Moscovitch, 2004), and several studies support use of speech tasks as reliable and valid strategies for assessing both self-reported and physiological reactions to stress (Dickerson & Kemeny, 2004). Yet, activating anxiety-related arousal using a speech task and assessing



reactivity to feedback about performance on this task involves one of many possible scenarios involving receipt of evaluative feedback. In fact, individuals may receive and have reactions to positive or negative evaluation in a variety of contexts, including those where speech performance is not a factor (e.g., group meetings at work, social gatherings). Future studies should assess whether FEAP task data relates to evaluative fears in other social contexts.

Third, we utilized self-reports to examine anxiety-related arousal in relation to evaluative feedback. Overall, our findings revealed significant changes in arousal across the FEAP task and differential changes in arousal as a function of receipt of positive versus negative feedback. At the same time, one might leverage a variety of ambulatory metrics to assess task reactivity, including heart rate, heart rate variability, and skin conductance (e.g., Thomas, Aldao, & De Los Reyes, 2012). Thus, future work should involve examining in-the-moment reactivity to evaluative feedback utilizing methods other than self-reported arousal.

### **Concluding Comments**

People often develop fears of negative and positive evaluation in relation to performance-based situations like public speaking and project assignments. These concerns factor prominently in the clinical presentations of those experiencing social anxiety. We developed the FEAP task to facilitate gathering data that meaningfully reflect anxiety-related responses to receiving positive and negative feedback about performance in social situations. Our findings support the ability of the FEAP task to elicit changes in arousal as a function of the sequence of feedback, and importantly, we demonstrated that exposure to positive feedback has the potential to buffer aversive reactions to subsequent receipt of negative feedback. We encourage future research on whether those with elevated fears of evaluation display distinct patterns of arousal in response to evaluative feedback, and whether FEAP task data usefully informs treatment planning.

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Table 1

*Means (M), Standard Deviations (SD) of Task Arousal Ratings, and Means Comparisons with Baseline Arousal (Paired t Test)*

<b>Variable</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>Paired t Test</i></b>	<b><i>Cohen's d</i></b>
Self-Assessment Manikin, Baseline	1.41	0.60	-	-
Self-Assessment Manikin, During Speech	2.78	1.05	15.67*	1.59
Self-Assessment Manikin, Following Feedback 1	2.03	1.04	7.03*	0.73
Self-Assessment Manikin, Following Feedback 2	1.84	0.96	5.21*	0.54
Self-Assessment Manikin, Before "Second Speech"	2.57	1.27	11.25*	1.16

*Note.* Baseline arousal ratings based on data from 126 participants because one participant declined to participate in the FEAP task before baseline arousal was taken. Arousal ratings for speech and feedback periods based on data from 125 participants because two participants declined to participate in the FEAP task. Arousal ratings before "second speech" based on data from 120 participants; in addition to the two participants who did not participate in the FEAP task, five participants requested to end the FEAP task before taking the SAM rating prior to the "second speech." \*  $p < .001$ .

Table 2

*Means (M), Standard Deviations (SD) of Task Manipulation Check Questions, by Condition*

Question	<i>Positive Feedback First (n = 64) Means (Standard Deviations)</i>	<i>Negative Feedback First (n = 61) Means (Standard Deviations)</i>	<b>Time x Feedback Condition Interaction</b>
<b>Feedback 1, Question 1:</b> How did you view this feedback? <b>Scale:</b> 1-5 (1 = very negative and 5 = very positive)	4.80 (0.67)	1.95 (1.12)	$F(1,122) = 305.60^*;$ $\eta^2 = .71$
<b>Feedback 2, Question 1:</b> How did you view this feedback? <b>Scale:</b> 1-5 (1 = very negative and 5 = very positive)	2.10 (1.13)	4.48 (0.91)	
<b>Feedback 1, Question 2:</b> How effective do you think you were in delivering your speech? <b>Scale:</b> 1-5 (1 = not effective at all and 5 = very effective)	3.29 (0.93)	2.93 (1.11)	$F(1,123) = 17.63^*;$ $\eta^2 = .12$
<b>Feedback 2, Question 2:</b> How effective do you think you were in delivering your speech? <b>Scale:</b> 1-5 (1 = not effective at all and 5 = very effective)	2.95 (1.16)	3.24 (1.05)	
<b>Feedback 1, Question 3:</b> How effectively do you think you would perform in the future if you were asked to give the same type of speech? <b>Scale:</b> 1-5 (1 = not effective at all and 5 = very effective)	4.22 (0.78)	3.53 (1.10)	$F(1,122) = 14.52^*;$ $\eta^2 = .10$
<b>Feedback 2, Question 3:</b> How effectively do you think you would perform in the future if you were asked to give the same type of speech? <b>Scale:</b> 1-5 (1 = not effective at all and 5 = very effective)	3.98 (0.92)	3.73 (1.02)	

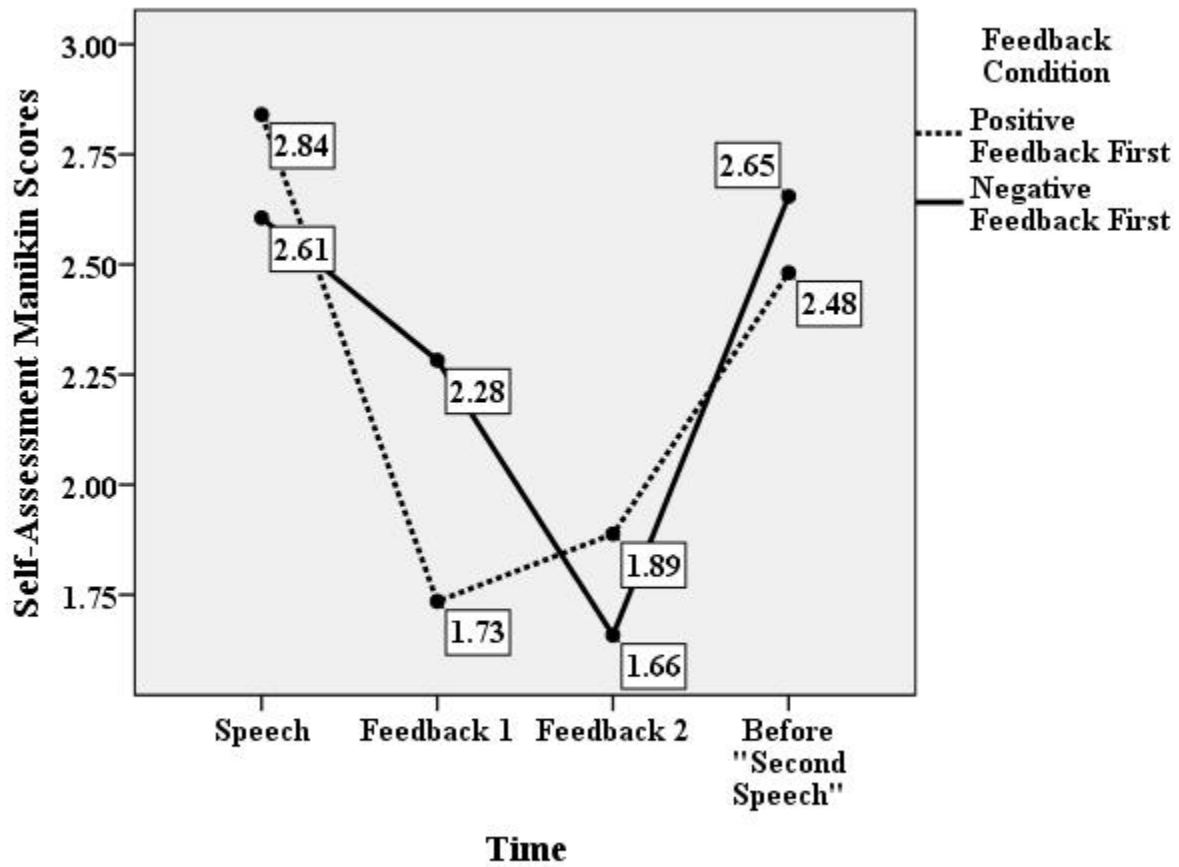
*Note.* All questions were completed by participants in both conditions (64 for positive feedback first, 61 for negative feedback first), except for these questions: Feedback 1, Question 3 (64, 60); Feedback 2, Question 1 (63, 61); and Feedback 2, Question 3 (64, 60). All omnibus tests based on Roy's Largest Root statistic. \*  $p < .001$ .

Table 3

*Repeated-Measures Analysis of Variance (ANOVA) Testing the Effects of Time and Feedback Condition and Their Interaction on Participants' Arousal During the Fears of Evaluation about Performance (FEAP) Task (n = 120)*

Main ANOVA Model			
Between-Subjects Factors		F	
Baseline Arousal		40.34*** ( $\eta^2 = .26$ )	
Feedback Condition		0.25 ( $\eta^2 = .002$ )	
Multivariate Factors		F (Roy's Largest Root)	
Time		4.52** ( $\eta^2 = .11$ )	
Time x Baseline Arousal		2.64 ( $\eta^2 = .06$ )	
Time x Feedback Condition		7.38*** ( $\eta^2 = .16$ )	
Within-Subjects Polynomial Contrasts for Time x Feedback Condition Interaction			
Contrast	F	p-Value	$\eta^2$
Linear	0.60	.44	.005
Quadratic	1.58	.211	.01
Cubic	19.35	< .001	.14

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .



**Figure 1.** Graphical depiction of time x feedback condition interaction effect, with baseline arousal included as a covariate. Standard errors for the Positive Feedback First condition were as follows: Speech (0.12), Feedback 1 (0.11), Feedback 2 (0.11), and Before “Second Speech” (0.15). Standard errors for the Negative Feedback First condition were as follows: Speech (0.12), Feedback 1 (0.11), Feedback 2 (0.11), and Before “Second Speech” (0.15).